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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,850	11/26/2002	Christian Maria Anton Heller	122023	3372

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/065,850

Applicant(s)

HELLER, CHRISTIAN MARIA  
ANTON

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 8-11, 19-21, 28-34, 36, 38 and 40-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12-18, 22-27, 35, 37 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12022002, 04142004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-7, 12-18, 22-27, 35, 37, and 39 in the reply filed on November 2, 2005 is acknowledged.
2. Claims 8-11, 19-21, 28-34, 36, 38, and 40-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 2, 2005.

### ***Specification***

3. The abstract of the disclosure is objected to because In the instant IFW file, the abstract has two pages, i.e., pages 28 and 29 of the instant specification. Since the abstract is supposed to be on a single sheet of paper, it is requested that said page 29, which has the word "Figures" on it, be deleted from the abstract. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 2-7 and 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is indefinite because it depends from itself. The same applies to dependent claims 3-7.

At line 3 in each of claims 4-6 and 15-17, it is not clear what is to be encompassed by the term "thereof". It is suggested that said term be changed to "of said first layer".

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Shiotsuka et al (U.S Patent Application Publication 2003/0005955).

Shiotsuka et al teaches a compound electrode comprising a first layer of a first electrically conducting material (104), and a plurality of elongated members (105a, 105b) in electrical contact with said first layer, said elongated members (105a, 105b) comprising a second electrically conductive material (see Figures 1A and 1B; and paragraphs 0060 to 0066). Layer (104) is, for example, 70 nm in thickness (see paragraph 0100), and, as seen in Figure 1B and paragraph 0104, said elongated members are much thicker than this. The elongated members (105a, 105b) intersect as in instant claim 3 (see Figure 1A). Since Shiotsuka et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

8. Claims 1, 12, 14, 22, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10-255982 (herein referred to as JP '982).

JP '982 teaches an organic electroluminescent element containing two of the instant compound electrodes, wherein one of JP '982's compound electrodes comprises layer (12), which reads on the instant first layer, and adjacent layer (20), which reads on the instant plurality of elongated members and can be in the form of stripes or a mesh; and another of JP '982's second compound electrodes comprises layer (16), which reads on the instant first layer, and adjacent layer (20), which reads on the instant plurality of elongated members and can be in the form of stripes or a mesh (see Figure 1; and paragraphs 0009 to 0015). Since JP '982 teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

9. Claims 1, 2, 12, 13, 22, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuri et al (U.S. Patent 6,949,878).

Suzuri et al teaches an organic EL element having the instant compound electrode, wherein the compound electrode comprises cathode buffer layer (electron injecting layer) (26), which reads on the instant first electrically conducting material and is made from, for example, a metal or LiF, and, in electrical contact with said layer (26) is a plurality of elongated members (27) (see Figure 7; col. 8, lines 54-62; col. 30, lines 60-66). The layer (26) has a thickness of, for example 0.5 nm, whereas the plurality of elongated members (27) each has a thickness of 200 nm (see col. 30, lines 60-66). Since Suzuri et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiotsuka et al (U.S Patent Application Publication 2003/0005955).

Shiotsuka et al teaches a compound electrode comprising a first layer of a first electrically conducting material (104), and a plurality of elongated members (105a, 105b) in electrical contact with said first layer, said elongated members (105a, 105b) comprising a second electrically conductive material (see Figures 1A and 1B; and paragraphs 0060 to 0066). Layer (104) is, for example, 70 nm in thickness (see paragraph 0100), and, as seen in Figure 1B and paragraph 0104, said elongated members are much thicker than this. The elongated members (105a, 105b) intersect as in instant claim 3 (see Figure 1A). Shiotsuka et al teaches the limitations of the instant claims, other than the difference which is discussed below.

With respect to claims 4-6, Shiotsuka et al does not specifically teach the total surface area of its plurality of elongated members (105a, 105b) with respect to the total surface area of said layer (104). However, Shiotsuka et al prepares a photovoltaic device, and said plurality of elongated members (105a, 105b) is on the light receiving side of the device (see paragraphs 0002, 0017, 0054, and 0060 to 0066). In the absence of anything unexpected, it would have been obvious to one of ordinary skill in

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the art at the time the invention was made to have prepared Shiotsuka et al's photovoltaic device such that the plurality of elongated members (105a, 105b) are as narrow as possible so as to permit as much light as possible to strike the photoelectric conversion layer (103) of the cell. The preparation of Shiotsuka et al's photovoltaic device such that said plurality of elongated members (105a, 105b) have a surface area that is less than 50%, or less than 25%, or less than 10% of the surface area of the layer (104) would have been within the level of ordinary skill in the art so as to permit as much light as possible to strike the photoelectric conversion layer (103) of the photovoltaic device.

With respect to claim 7, when an area of short circuit is present in said layer (104), it is the Examiner's position that an area surrounding a point of the short circuit is capable of being ablated by heat generated by the short circuit because Shiotsuka et al's compound electrode has the same structure as the instant compound electrode.

12. Claims 1-7, 12-18, 35, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiotsuka et al (U.S Patent Application Publication 2003/0005955) in view of Sariciftci et al (U.S. Patent 5,331,183).

Shiotsuka et al teaches a compound electrode comprising a first layer of a first electrically conducting material (104), and a plurality of elongated members (105a, 105b) in electrical contact with said first layer, said elongated members (105a, 105b) comprising a second electrically conductive material (see Figures 1A and 1B; and paragraphs 0060 to 0066). Layer (104) is, for example, 70 nm (see paragraph 0100), and, as seen in Figure 1B and paragraph 0104, said elongated members are much

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thicker than this. The elongated members (105a, 105b) intersect as in instant claim 3 (see Figure 1A). Shiotsuka et al teaches the limitations of the instant claims, other than the differences which are discussed below.

With respect to claim 12 and its dependent claims and claim 39, Shiotsuka et al does not specifically teach that its photoelectric conversion layer (103) comprises an electron donating organic semiconductor material and an electron accepting organic semiconducting material. Shiotsuka et al does teach a pn junction, a pin junction, a Schottky junction, or the like, and exemplifies semiconductors such as a-Si and a-SiGe, but Shiotsuka et al is not limited to these semiconductors (see paragraphs 0057 and 0058). The use of two organic semiconducting materials to form a heterojunction for the photoelectric conversion layer is known in the art, as evidenced by Sariciftci et al. Sariciftci et al uses conjugated polymer and fullerene to form a pn heterojunction (see col. 1, lines 7-12; and col. 2, lines 19-29). The advantage of using organic materials is cost saving, the production of robust, large devices, and the matching of the absorption spectrum of the conjugated polymer to the solar spectrum (see the paragraph bridging cols. 1 and 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Sariciftci et al's conjugated polymer and fullerene to form the pn junction in Shiotsuka et al's photovoltaic device because the use of such organic materials to prepare the pn junction of a photovoltaic device provides the advantage of cost saving, the production of robust, large devices, and the matching of the absorption spectrum of the conjugated polymer to the solar spectrum, as taught by Sariciftci et al. With respect to claim 39, the preparation of a solar panel with plural of



Shiotsuka et al in view of Saricifcti et al's photovoltaic device connected, for example, in series, would have been well within the skill of an artisan to as to obtain a desired voltage.

With respect to claims 4-6 and 15-17, Shiotsuka et al does not specifically teach the total surface area of its plurality of elongated members (105a, 105b) with respect to the total surface area of said layer (104). However, Shiotsuka et al prepares a photovoltaic device, and said plurality of elongated members (105a, 105b) is on the light receiving side of the device (see paragraphs 0002, 0017, 0054, and 0060 to 0066). In the absence of anything unexpected, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared Shiotsuka et al's photovoltaic device such that the plurality of elongated members (105a, 105b) are as narrow as possible so as to permit as much light as possible to strike the photoelectric conversion layer (103) of the cell. The preparation of Shiotsuka et al's photovoltaic device such that said plurality of elongated members (105a, 105b) have a surface area that less than 50%, or less than 25%, or less than 10% of the surface area of the layer (104) would have been within the level of ordinary skill in the art so as to permit as much light as possible to strike the photoelectric conversion layer (103) of the photovoltaic device.

With respect to claims 7 and 18, when an area of short circuit is present in said layer (104), it is the Examiner's position that an area surrounding a point of the short circuit is capable of being ablated by heat generated by the short circuit because

Shiotsuka et al's compound electrode has the same structure as the instant compound electrode.

13. Claims 1, 12, 14-18, 22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-255982 (herein referred to as JP '982).

JP '982 teaches an organic electroluminescent element containing two of the instant compound electrodes, wherein one of JP '982's compound electrodes comprises layer (12), which reads on the instant first layer, and adjacent layer (20), which reads on the instant plurality of elongated members and can be in the form of stripes or a mesh; and another of JP '982's second compound electrodes comprises layer (16), which reads on the instant first layer, and adjacent layer (20), which reads on the instant plurality of elongated members and can be in the form of stripes or a mesh (see Figure 1; and paragraphs 0009 to 0015). JP '982 teaches the limitations of the instant claims, other than the difference which is discussed below.

With respect to claims 15-17, JP '982 does not specifically teach the total surface area of its plurality of elongated members (20) with respect to the total surface area of either said layer (12) or said layer (16). However, JP '982 is not limited to any particular width for its members (20). The use of a width of the members (20) such that the members (20) have a surface area that is less than 50%, or less than 25%, or less than 10% of the surface area of the layer (12) or (16) would have been within the level of ordinary skill in the art so as to prepare a working organic electroluminescent device.

With respect to claim 18, when an area of short circuit is present in said layer (12) or (16), it is the Examiner's position that an area surrounding a point of the short

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circuit is capable of being ablated by heat generated by the short circuit because JP '982's compound electrodes have the same structure as the instant compound electrode.

14. Claims 1-7, 12-18, 22-27, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuri et al (U.S. Patent 6,949,878).

Suzuri et al teaches an organic EL element having the instant compound electrode, wherein the compound electrode comprises cathode buffer layer (electron injecting layer) (26), which reads on the instant first electrically conducting material and is made from, for example, a metal such as Sr or Al, or from LiF, and, in electrical contact with said layer (26) is a plurality of elongated members (27) made from Al (see Figure 7; col. 8, lines 54-62; col. 30, lines 60-66). The layer (26) has a thickness of, for example 0.5 nm, whereas the plurality of elongated members (27) each has a thickness of 200 nm (see col. 30, lines 60-66). Suzuri et al teaches the limitations of the instant claims, other than the differences which are discussed below.

With respect to claims 3 and 14, Suzuri et al does not specifically teach that its elongated member (27) intersect. The elongated members (27) are part of the cathode for the device (see col. 30, line 65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used intersecting lines, i.e., a mesh, rather than parallel lines for the cathode in Suzuri et al's device because such would have been a matter of design choice. A skilled artisan would expect the device to function properly whether parallel lines or intersecting lines, such a mesh, are used for the cathode.

With respect to claims 4-6 and 15-17, Suzuri et al does not specifically teach the total surface area of its elongated members (27) with respect to the total surface area of said layer (26). However, Suzuri et al is not limited to any particular length and width for its members (27). The use of a length and width of the members (27) such that the members (27) have a surface area that is less than 50%, or less than 25%, or less than 10% of the surface area of the layer (26) would have been within the level of ordinary skill in the art so as to prepare a working organic EL element.

With respect to claims 7 and 18, when an area of short circuit is present in said layer (26), it is the Examiner's position that an area surrounding a point of the short circuit is capable of being ablated by heat generated by the short circuit because Suzuri et al's compound electrodes have the same structure as the instant compound electrode.

With respect to claims 23-25 and 27, Suzuri et al, as noted above, teaches that the layer (26) has a thickness of, for example 0.5 nm, whereas the plurality of elongated members (27) each has a thickness of 200 nm (see col. 30, lines 60-66). The layer (26) can, in general, have a thickness of 0.1 to 100 nm (see col. 8, lines 63-65). Suzuri et al does not specifically require that said layer (26) has a thickness of about 1 to about 25 nm as in said claims 23-25 and 27. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared Suzuri et al's organic EL element such that the layer (26) has a thickness with the range of about 1 to about 25 nm because Suzuri et al exemplifies a thickness of 0.5 nm and teaches, in general, that the thickness can be from 0.1 to 100 nm.

With respect to claim 37, Suzuri et al does not specifically require a plurality of its organic EL elements disposed on a support. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared a device with a plurality of Suzuri et al's organic EL elements on a support so that a desired pattern or display could be obtained.

### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2002/0190263, US 6,586,764, US 2004/0051444, and US 6,936,761 are hereby made of record.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond  
Primary Examiner  
Art Unit 1753

Alan Diamond  
January 5, 2006

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.